

Remarks

Applicants respectfully request reconsideration of the rejection of the claims in view of the above amendments and the remarks set forth below. Claims 1, 3-5, 7, 9-11, and 22-23 remain in the application. Claims 1, 5, 10, 22, and 23 are amended. Claims 3-4 and 9 were previously presented. Claims 7 and 11 remain unchanged. Claims 2, 6, 8 and 12-21 are canceled.

Objections

Claim 10 is objected to because of informalities in the claim. Claim 10 has been amended to correct the informalities. Applicants respectfully request reconsideration in view of the above remarks.

35 U.S.C. §112

Claim 23 stands rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. First, the applicants have amended the specification to include material incorporated by reference to provisional application 60/552, 652 filed on March 12, 2004 and inadvertently omitted. The inclusion of the material is permitted under MPEP 608.01(p) and 37 CFR 1.57 based on the listing of the reference claiming the benefit of priority under 35 U.S.C. §119 at the beginning of the specification. In particular, the material found on page 2, at indicator numeral 4, lines 19-21 and on page 6 lines 33-37 of the incorporated reference has been amended into the specification on page 15, line 13. The applicants respectfully submit that no new matter has been added. Additionally, claim 23 has been amended in order to overcome the examiner's rejection. Support for the amendment can be found in the amended portion of the specification on page 15 lines 13-20. Applicants respectfully request reconsideration of the rejection of claim 23 in view of the above remarks.

35 U.S.C. §103

Claims 1, 5-7, and 9-11 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Okoshi et al. in view of Chida et al and Hayworth et al. Under 35 U.S.C. § 103, the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to be obvious in light of the teachings of the references (MPEP § 706.02(j)).

The applicants respectfully traverse the rejection and submit the following for consideration by the examiner. Amended claim 1 recites, inter alia, a “motion sensor comprising . . . an assembly having suspension members, the suspension members isolating the assembly and components mounted on the assembly from vibrations and passing digital signals between at least one component mounted on the assembly and an external controller not mounted on the assembly . . . a vibrating member mounted on the assembly . . . a driver mounted on the assembly for driving the vibrating member . . . a sensor mounted on the assembly for detecting movement of the vibrating member in response to rotation of the assembly, the sensor outputting an analog signal responsive to the rotation of the assembly . . . and digital electronics mounted on the assembly and coupled to the driver, the sensor, and the suspension members, the digital electronics applying a drive signal to the driver, receiving the analog signal from the sensor, and transmitting, through at least one of the suspension members, digital data indicative of the rotation of the assembly to the external controller, the digital electronics also storing a calibration value generated external to the motion sensor and transmitted to the digital electronics over at least one of the suspension members.” (Emphasis added). Support for the amendment to claim 1 is at least provided in original claims 5 and 6.

The “digital electronics mounted on the assembly and coupled to the driver, the sensor, and the suspension members, the digital electronics applying a drive signal to the driver, receiving the analog signal from the sensor, and transmitting, through at least one of the suspension members, digital data indicative of the rotation of the assembly to the external controller, the digital electronics also storing a calibration value generated external to the

motion sensor and transmitted to the digital electronics over at least one of the suspension members” element is an important aspect of the applicants’ invention in that it is desirable to have the ability to store unit-specific calibration values in order to eliminate errors and to allow for a small sensor that is adaptable to a wide range of applications. (page 1, line 35 to page 2 line 10). In other words, the inclusion of digital electronics that can be used to drive the driver, receive the sensor signal, transmit a digital signal indicative of the rotation of the assembly, and receive and store externally generated calibrations helps to make an adaptable, error free, compact sensor. The applicants propose that neither Okoshi, nor Chida, nor Hayworth, taken individually or in combination, show or suggest at least the “digital electronics mounted on the assembly and coupled to the driver, the sensor, and the suspension members, the digital electronics applying a drive signal to the driver, receiving the analog signal from the-sensor, and transmitting, through at least one of the suspension members, digital data indicative of the rotation of the assembly to the external controller, the digital electronics also storing a calibration value generated external to the motion sensor and transmitted to the digital electronics over at least one of the suspension members” element of amended claim 1.

Okoshi appears to be directed at a motion sensor structure including a vibrating tuning fork and a sensor mounted on an assembly attached to a frame through a plurality of “Z” shaped members. The “Z” shaped members provide external shock resistance and also carry signals, including a drive signal for the tuning fork, to and from the assembly (column 5 line 35 to column 6 line 10). The assembly also includes an analog IC that only interfaces with the sensor and processes the sensor signal (column 3 lines 60-66). In contrast, claim 1 includes “digital electronics mounted on the assembly and coupled to the driver, the sensor, and the suspension members, the digital electronics applying a drive signal to the driver, receiving the analog signal from the-sensor, and transmitting, through at least one of the suspension members, digital data indicative of the rotation of the assembly to the external controller, the digital electronics also storing a calibration value generated external to the motion sensor and transmitted to the digital electronics over at least one of the suspension members.” As acknowledged in the office action, Okoshi does not show a digital IC for providing a digital

signal to an external computer. Further, applicants note that Okoshi also does not appear to show or suggest the “digital electronics mounted on the assembly and coupled to the driver, the sensor, and the suspension members, the digital electronics applying a drive signal to the driver, receiving the analog signal from the-sensor, and transmitting, through at least one of the suspension members, digital data indicative of the rotation of the assembly to the external controller, the digital electronics also storing a calibration value generated external to the motion sensor and transmitted to the digital electronics over at least one of the suspension members” element of amended claim 1. Therefore, Okoshi does not show or suggest at least the “digital electronics mounted on the assembly and coupled to the driver, the sensor, and the suspension members, the digital electronics applying a drive signal to the driver, receiving the analog signal from the-sensor, and transmitting, through at least one of the suspension members, digital data indicative of the rotation of the assembly to the external controller, the digital electronics also storing a calibration value generated external to the motion sensor and transmitted to the digital electronics over at least one of the suspension members” element of amended claim 1.

Chida appears to be directed at a sensing device that includes a motion sensing element and a separate circuit device. The circuit device includes both a driving circuit for the sensing element and an output circuit. (paragraph 0090) The output circuit produces an analog output signal indicative of the magnitude of vibration of the sensor. (paragraph 0054-0055). Chida does not appear to show or suggest the “digital electronics mounted on the assembly and coupled to the driver, the sensor, and the suspension members, the digital electronics applying a drive signal to the driver, receiving the analog signal from the-sensor, and transmitting, through at least one of the suspension members, digital data indicative of the rotation of the assembly to the external controller” element of amended claim 1. Therefore, Chida does not overcome the deficiencies found in Okoshi.

Hayworth appears to be directed at an electrostatic bias resonator gyroscope mounted on a base plate. Hayworth gives little detail (i.e. less than one full paragraph) on how to

combine additional electronics with the resonator gyroscope. Hayworth merely discloses “that when combined with a low power digital control electronics application specific integrated circuit (ASIC) for much larger quantities, a very small navigation unit can be produced.” (column 5, lines 41-44). Hayworth does not appear to show or suggest the “digital electronics mounted on the assembly and coupled to the driver, the sensor, and the suspension members, the digital electronics applying a drive signal to the driver, receiving the analog signal from the sensor, and transmitting, through at least one of the suspension members, digital data indicative of the rotation of the assembly to the external controller” element of amended claim 1. Indeed, Hayworth does not appear to include any teachings on how exactly any electronics might be combined with the Hayworth resonator gyroscope, let alone the “digital electronics mounted on the assembly and coupled to the driver, the sensor, and the suspension members” element of claim 1. Therefore, Hayworth does not overcome the deficiencies found in Okoshi or Chida.

As a result, neither Okoshi, nor Chida, nor Hayworth, taken alone or together, show or suggest at least the “digital electronics mounted on the assembly and coupled to the driver, the sensor, and the suspension members, the digital electronics applying a drive signal to the driver, receiving the analog signal from the-sensor, and transmitting, through at least one of the suspension members, digital data indicative of the rotation of the assembly to the external controller” element of claim 1. Therefore it is respectfully proposed that the rejection of amended claim 1 under 35 U.S.C. § 103(a) is overcome in accordance with the above remarks and notice to that effect is earnestly solicited.

Claims 5-7 and 9-11 depend from amended claim 1 or depend from claims depending from amended claim 1, and should therefore also be allowable for the same reasons, as well as for the additional recitation contained therein. Applicants respectfully requests reconsideration of the rejection of the claims in view of the above remarks.

Claims 3, 4 and 22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Okoshi et al. in view of Chida et al and Hayworth et al, and further in view of Hamisch et al. or

Henderson et al. Claims 3 and 4 depend from amended claim 1 or depend from claims depending from amended claim 1, and should therefore also be allowable for the same reasons, as well as for the additional recitation contained therein. Independent claim 22 is amended to include elements similar to the elements of amended independent claim 1 and should therefore be allowable for the same reasons discussed above as well as for the additional recitations contained therein. Therefore, it is respectfully proposed that the rejection of claims 3, 4, and 22 for obviousness is overcome and notice to that effect is earnestly solicited.

Conclusion

Having fully addressed the Examiner's rejections it is believed that, in view of the preceding remarks, this application stands in condition for allowance. Accordingly then, reconsideration and allowance are respectfully solicited. If, however, the Examiner is of the opinion that such action cannot be taken, the Examiner is invited to contact the applicants' attorney at (317) 587-4027, so that a mutually convenient date and time for a telephonic interview may be scheduled.

No fees, other than those discussed above, are believed due. However, if a fee is due, please charge the additional fee to Deposit Account 07-0832.

Respectfully submitted,

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